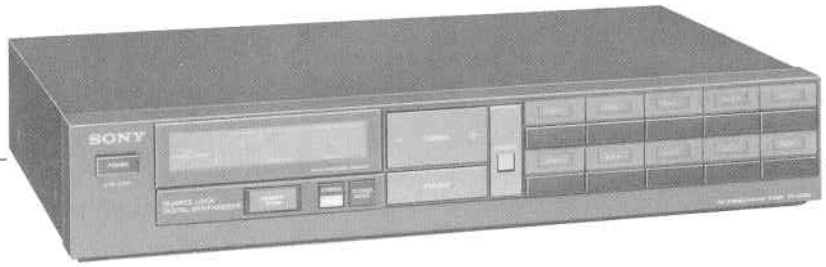
SONY®

FM STEREO/FM-AM TUNER

ST-JX410

OPERATING INSTRUCTIONS

Before operating the unit, please read this manual thoroughly.
This manual should be retained for future reference.



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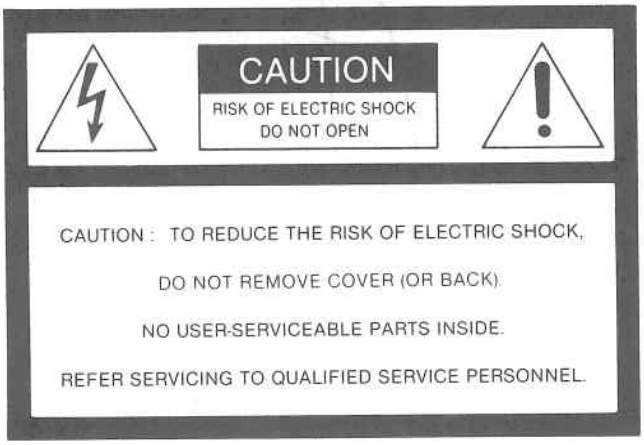
OWNER'S RECORD

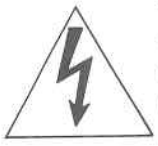
The model and serial numbers are located at the rear. Record the serial number in the space provided below. Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No. ST-JX410 Serial No. _____

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.


CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
CAUTION : TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to person.

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

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FEATURES

The quartz-locked digital frequency-synthesizer system allows accurate and stable tuning that is not affected by temperature variations or long period usage.

Quick and accurate station selection is possible with an electronic digital readout on the band/frequency-display.

Four methods of tuning are available:

Manual tuning, in which each band can be scanned either rapidly or step-by-step.

Automatic tuning, in which the FM band is scanned automatically until a signal is received.

Sweep tuning, in which the entire FM band is scanned. In this mode, when a signal is received, scanning stops for a few seconds to allow you to monitor the received station, then the scanning resumes.

Memory preset tuning, in which the frequency of up to 10 stations can be stored in the memory. In this mode, you can tune in your favorite station by pushing its station button.
The setting of the STEREO/MUTING button can also be memorized for each station.

The MEMORY SCAN button allows you to scan the preset stations only .

Using **the optional RM-S410 system remote controller,** power on/off, preset station selection and timer operation can be controlled.

PRECAUTIONS

On safety

- Operate the unit only on 120 V ac, 60 Hz.
- Should any liquid or solid object fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- Unplug the unit from the wall outlet if it is not to be used for an extended period of time. To disconnect the cord, pull it out by grasping the plug. Never pull it out by the cord.

On installation

- Do not install the unit in a location near heat sources such as radiators or air ducts, or in a place subject to direct sunlight, excessive dust, mechanical vibration or shock.
- Good air circulation is essential to prevent internal heat build-up in the unit. Place the unit in a location with adequate air circulation.

On operation

When the unit is not in use, turn the power off to conserve energy and to extend the useful life of your unit.

On cleaning

Clean the cabinet, front and rear panels periodically with a soft dry cloth. If the stains are difficult to remove, use a cloth moistened with a mild detergent solution. Do not use solvents such as alcohol, benzine or thinner, since they will damage the finish.

On repacking

Do not throw away the carton and the packing material. It makes an ideal container to transport the unit in. When shipping the unit for repair work or to another location, repack it as illustrated on the carton box.

Note about the AM channel plan selector

This tuner has a two-position AM channel plan selector underneath the left front corner. To tune in AM stations correctly, the selector should be correctly set according to the AM frequency allocation system of your country.

10 kHz: for countries where the frequencies are allocated at intervals of 10 kHz, for example, the USA and Canada.

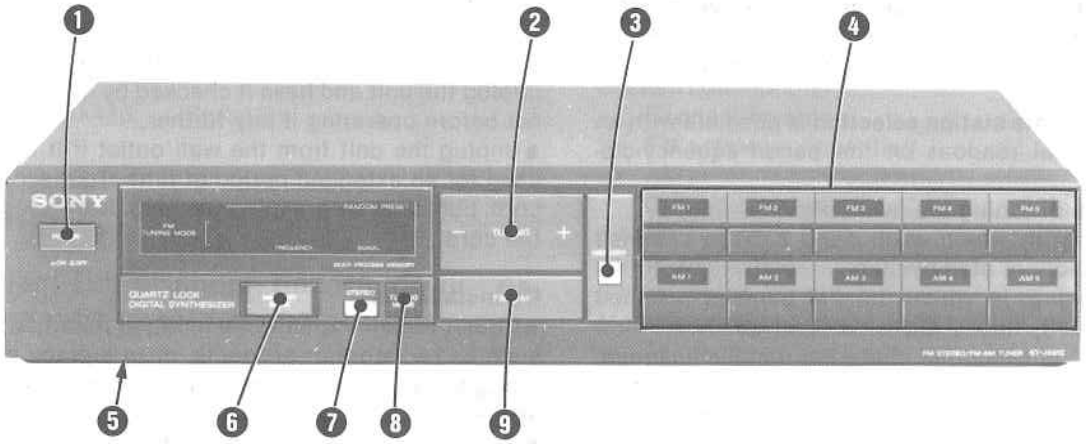
9 kHz: for countries where the frequencies are allocated at intervals of 9 kHz.

This selector is factory preset at 10 kHz. If the AM frequencies are allocated at intervals different to that of your country, the selector should be set to the appropriate interval. **Be sure to turn off the power before changing the position of the selector.**

For the customers in the USA

For detailed safety precautions, see the leaflet "IMPORTANT SAFEGUARDS".

FUNCTION OF CONTROLS



❶ POWER switch
Depress to turn on the power. To turn the power off, press the switch again.

❷ TUNING button
Press the left side [–] to go to a lower frequency and the right side [+] to go to a higher.
During automatic tuning : Press to start automatic frequency scanning. The frequencies below or above that shown on the display window will be scanned automatically until a signal is received. To resume scanning, press the button again.
During sweep tuning : Press to scan the entire band. When a signal is received, the scanning will stop for a few seconds while the SWEEP indicator flashes, then resumes, scanning automatically until the next signal is received. This operation will be repeated until you press the MEMORY button.
During manual tuning : Keep pressed to change the frequency continuously until the desired frequency is received. The frequency figures will change rapidly. Successively press and immediately release the button to change the frequency slowly.

❸ MEMORY button
Press to operate memory circuit. The MEMORY indicator will appear in the display window for a few seconds indicating that the memory circuit is standing by.

❹ Station preset buttons and station identification windows
To call up a memorized station, press the appropriate button. Station labels (supplied) can be placed in these window.

❺ Remote control connector
Connect the optional RM-S410 system remote controller for remote operation.

❻ MEMORY SCAN button
Press to automatically scan the stations memorized on the station preset buttons.

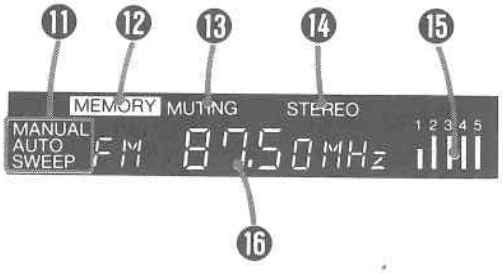
❼ STEREO/MUTING button
This button serves the dual purpose of a mode and FM muting switch. To eliminate FM interstation noise while tuning from station to station, press this button so that the MUTING indicator appears. The tuner operates in stereo mode for stereo sound sources and will be automatically switched to mono mode for monaural sound sources.

❽ TUNING MODE button
Select a tuning system—MANUAL, AUTO or SWEEP. The selected tuning system will be indicated in the display window.

❾ FM/AM band selector
Select the desired band. The selected band will be indicated in the band/frequency-display window.

❿ LAYOUT FREE AM external ferrite-bar antenna
For AM reception, always connect this antenna to the AM ANTENNA and ⏚ terminals on the rear panel. Position the LAYOUT-FREE AM antenna for best reception.

Display window



⑪ FM TUNING MODE indicators
The tuning system selected by the TUNING MODE button is displayed.

⑫ MEMORY indicator
When the MEMORY button is pressed, the MEMORY indicator will appear for a few seconds indicating that the memory circuit is standing by.

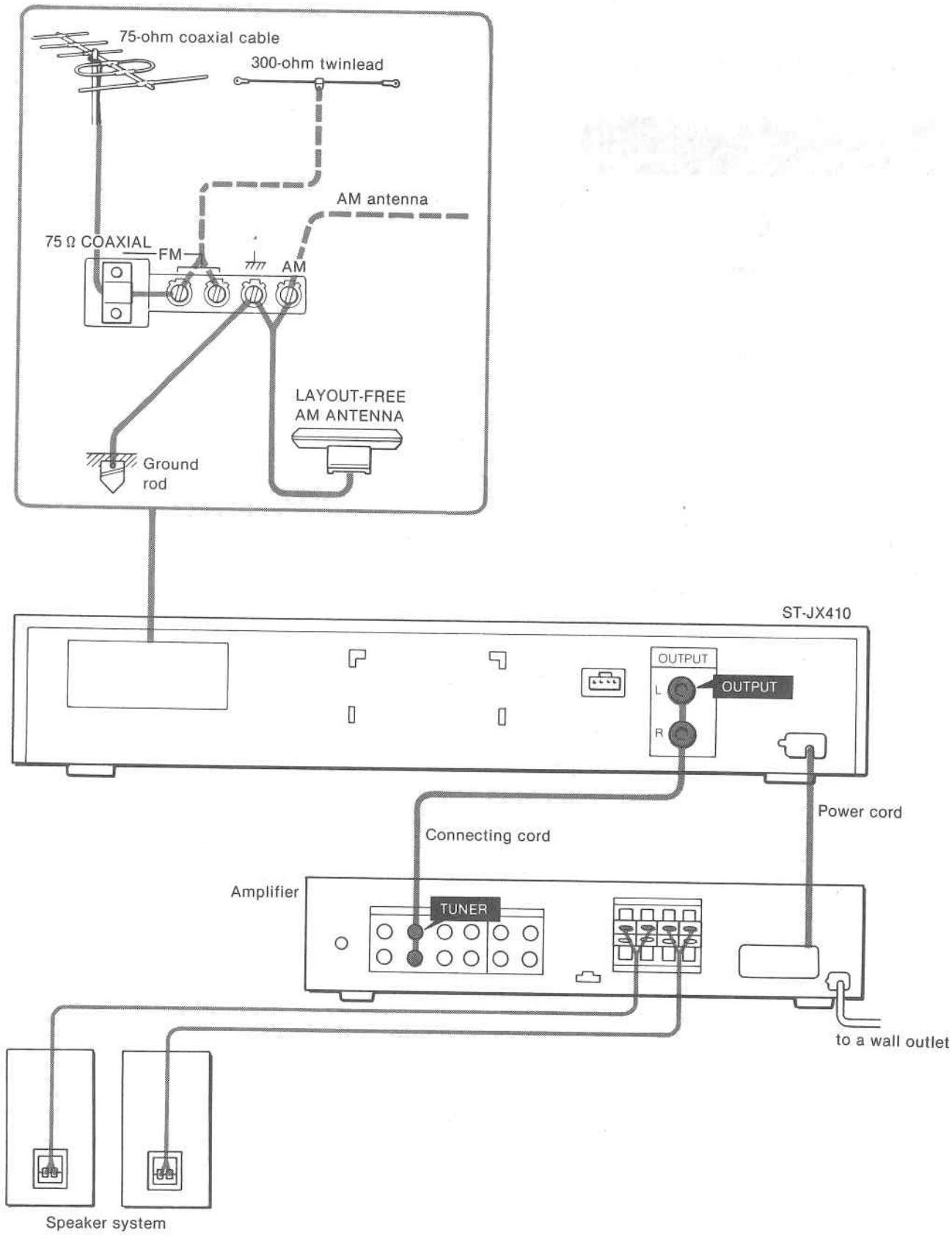
⑬ MUTING indicator
This indicator appears when the STEREO/MUTING button is pressed in FM reception.

⑭ STEREO indicator
This indicator will appear when an FM stereo program of sufficient signal strength is tuned in with the STEREO/MUTING button pressed.

⑮ Signal indicator
Indicates the strength of the tuned signal by the amount of indicator illumination.

⑯ Band/frequency-display
Permits reading the received frequency at a glance from the figures.

SYSTEM CONNECTIONS



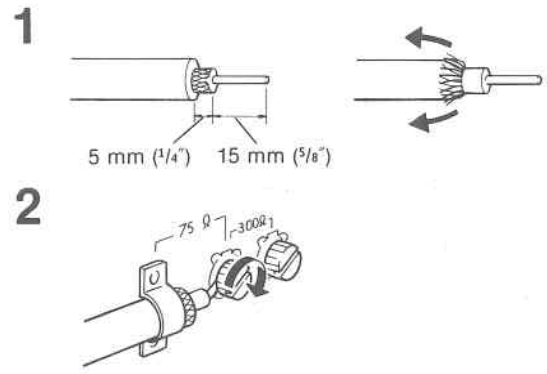
CONNECTION NOTES

- The power cord should be connected last of all, first making sure that the POWER switch is turned off.
- Keep the speaker cords, connecting cord and power cord away from the LAYOUT-FREE AM antenna or antenna lead-in of the tuner to avoid possible noise pickup.
- Be sure to connect the red plug of the supplied connecting cord to the right [R] jack and the remaining one to the left [L]. The cable connectors should be fully inserted into the jacks. A loose connection may cause hum and noise.

FM ANTENNA CONNECTION

To get the best from your tuner, it is important to use an outdoor antenna. Be sure to pick an outdoor antenna which suits your location.

75-ohm coaxial cable connection
75-ohm coaxial cable is free from external interference, reduces noise pickup, and is the ideal transmission line for most FM antenna installations.

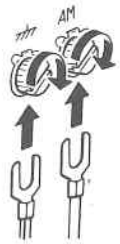


300-ohm twinlead connection
Standard 300-ohm twinlead is inexpensive but susceptible to the pickup of extraneous noise.
To route the twinlead over the roof or outerwall, use stand-off insulators. Keep the lead as short as possible and avoid running parallel to other wires or metal pipes.

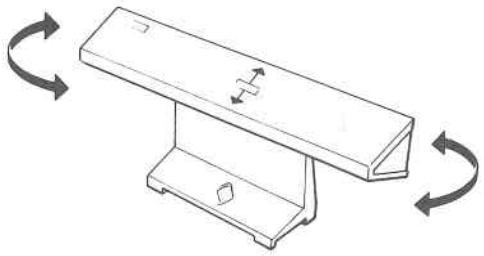
Ribbon antenna supplied
Until you install a suitable outdoor antenna, the ribbon antenna may be useful. Connect it to the 300-ohm antenna terminals and fasten the ends to a wall, etc., using thumbtacks or adhesive tape. Fully extend the antenna and position it for the best reception.

AM ANTENNA CONNECTION

Supplied LAYOUT-FREE AM external ferrite bar antenna
Always keep the LAYOUT-FREE AM antenna connected to the AM ANTENNA and ⏚ terminals. Connect the lead-in marked in white to the ⏚ terminal. AM reception cannot be made without this antenna.

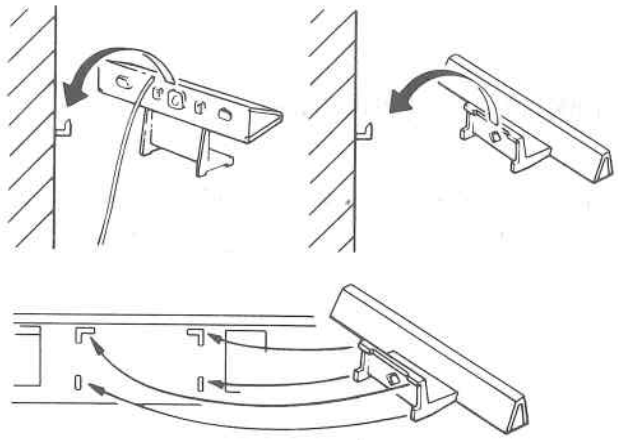


This antenna is designed to pick up signals from a particular direction. Move the LAYOUT-FREE AM antenna to obtain optimum reception.



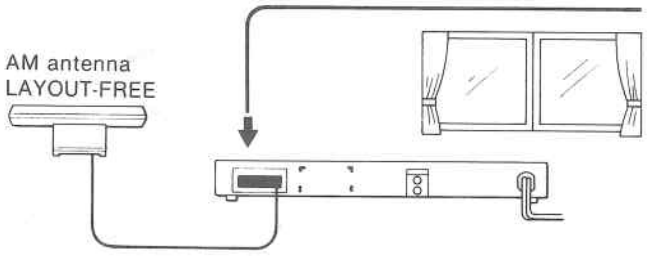
If a beating sound should be heard while recording AM programs, move the LAYOUT-FREE AM antenna to the position where it is not heard.

This antenna can be placed in various places, such as on the speaker, amplifier, desk, etc.
It can also be hung on the wall, or on the rear panel of the tuner.



For convenience, the antenna lead-in of the LAYOUT-FREE AM antenna can be wound around the hooks on the rear.

Outdoor antenna
In most areas, the LAYOUT-FREE AM antenna will provide satisfactory reception. In difficult reception areas, it may be necessary to connect a length of insulated wire 6 - 15 meters (20 - 50 feet) long to the AM ANTENNA terminal. Extend this out of doors if possible, keeping the greater portion horizontal.
When an outdoor antenna is connected, there is no need to disconnect the LAYOUT-FREE AM antenna.

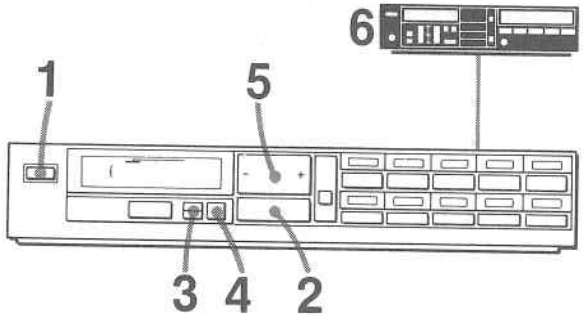


GROUND CONNECTION

When an outdoor antenna is installed, a direct ground is recommended for lightning protection. The use of a lightning arrester is recommended for any outdoor antenna.

MANUAL TUNING

Follow the numbered sequence.



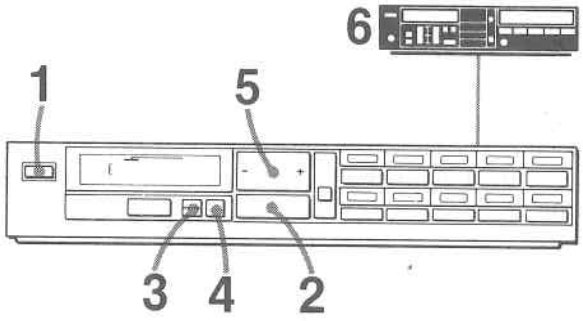
1 Depress the POWER switch (⏏ ON).
2 Select the desired band with the FM/AM band selector.
3 For FM reception, press the STEREO/MUTING button so that the MUTING indicator appears.
To tune in a very weak station, see below.
4 During FM reception, press the TUNING MODE button so that the MANUAL indicator appears.
5 Tune in the desired station with the TUNING button, observing the STEREO indicator (in FM reception), the signal indicator and the band/frequency-display.
6 Adjust the volume and tone of the amplifier.

When the frequency figures reach the end of the tuning range of each band, the frequency will then be scanned from the opposite end of the tuning range.

To tune in a weak or noisy station
When FM stereo signals are noisy, or to tune in a very weak FM station, lower the volume and disengage the STEREO/MUTING button by pressing it again. The MUTING indicator will go out. This will result in better reception, at the sacrifice of the stereo effect.

AUTOMATIC TUNING (for FM only)

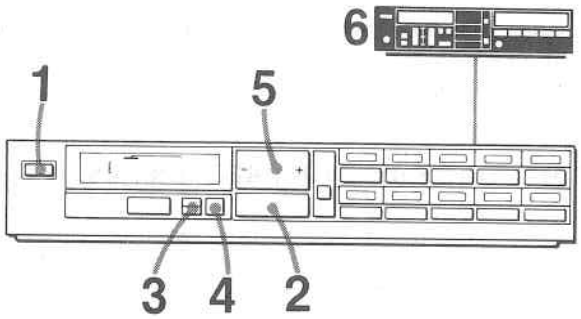
Follow the numbered sequence.



1 Depress the POWER switch (⏏ ON).
2 Select the FM band with the FM/AM band selector.
3 Press the STEREO/MUTING button so that the MUTING indicator appears.
4 Press the TUNING MODE button so that the AUTO indicator appears.
5 Press the TUNING button.
Automatic frequency scanning will stop when a signal is received. If the signal received is not the desired one, press the TUNING button again.
6 Adjust the volume and tone of the amplifier.

SWEEP TUNING (for FM only)

Follow the numbered sequence.



1 Depress the POWER switch (⏏ ON).
2 Select the FM band with the FM/AM band selector.
3 Press the STEREO/MUTING button so that the MUTING indicator appears.
4 Press the TUNING MODE button so that the SWEEP indicator appears.
5 Press the TUNING button.
When a signal is received, scanning will stop and the SWEEP indicator flashes, so the received station can be heard for a few seconds, after which scanning resumes.
To stop sweep tuning, press the MEMORY button.
6 Adjust the volume and tone of the amplifier.

During automatic tuning or sweep tuning, if the signal strength is weak, the band/frequency-display figures will not stop at the desired frequency. When this happens, adjust the antenna for optimum reception. If the signal strength is still too weak for automatic tuning, tune in the station as described in "MANUAL TUNING".

MEMORY PRESET TUNING

Once the frequencies of the stations you want to tune in are memorized, all you have to do is push a button.

For each station preset button, you can memorize an FM or an AM station in any desired sequence. A total of 10 stations can be memorized.

TO MEMORIZE STATION FREQUENCIES

1 Tune in the desired station following the procedure described in "MANUAL TUNING", "AUTOMATIC TUNING" or "SWEEP TUNING".
2 Press the MEMORY button, and while the MEMORY indicator is illuminated, press the desired station preset button.

The MEMORY indicator will go out. Then the frequency is memorized.

Repeat these steps for each station preset button.

Press each preset button to check a memorized frequency.

Notes

- The MEMORY indicator will go off automatically after a few seconds. When the indicator is out, the memory circuit does not operate to memorize the station.
- The previous memory will be erased when a new frequency is committed to the memory of the same button. An erasure cannot be made without a new input.

TO RECEIVE A MEMORIZED STATION

Turn the POWER switch on, and simply press the desired station preset button.

Memory of the last received station

This tuner includes a memory circuit, which is backed up by the lithium manganese batteries, to remember the station which had been received for more than one second just before the power was turned off. This station will be automatically tuned in when the power is turned on again.

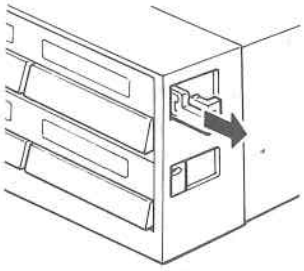
MEMORY SCANNING

The MEMORY SCAN button allows you to quickly hear what kind of programs are being broadcast by the preset station.
When you press the MEMORY SCAN button, the memorized stations are automatically received in order for a few seconds each. Pushing a particular station preset button stops the scanning. The scanning sequence will be shown by the flickering of the lamp in the station identification window above the station preset button.

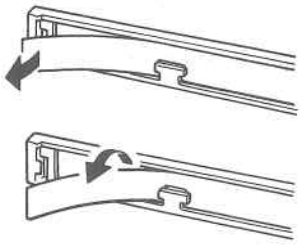
STATION LABEL INSERTION

Station labels are supplied for identification of the preset stations.
Affix the labels as shown below.

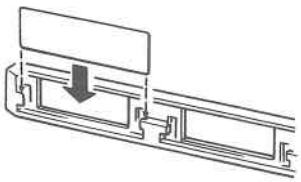
1 Pull out the station identification plate from its slot on the right side.



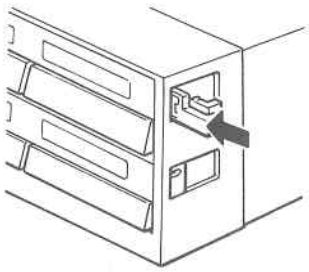
2 Remove the label by pushing it out from the rear. Lightly pull upwards to remove the right side.



3 Pick out the appropriate labels for the memorized stations and put them in the plate as shown, in the correct order.



4 Replace the plate.



Check that the station labels match the memorized stations by tuning in to each station.

TROUBLE CHECKS

The following checks will assist in the correction of most problems which you may encounter with your unit. Should any problem persist after you have made these checks, consult your nearest Sony service facility.
Before going through the check list below, first refer back to the connection and operating procedures.

No audio output
- Check the connections to the amplifier.
- Check the setting of the amplifier's input selector, volume control and power switch.
- See if the station is tuned in correctly.
- Check the antenna connection.

SIGNAL indicator reading is unstable.
- Tune in the station accurately.
- Adjust the antenna.

STEREO indicator does not light when receiving stereo programs.
- Press the STEREO/MUTING button so that the MUTING indicator appears.
- Adjust the antenna.

STEREO indicator flickers.
- Tune in the station accurately.
- When the signal is weak, adjust the antenna or connect an external FM antenna.

Tuning cannot be done correctly when the station preset button is pressed.
- Memorize the frequency correctly.

The desired FM station cannot be tuned in with the automatic or sweep tuning system.
- The signal strength is too weak for automatic or sweep tuning.

Adjust the antenna for optimum reception or disengage the STEREO/MUTING button and tune in the station with manual tuning system.

Severe hum or noise
- Ground the tuner.
- Avoid long horizontal runs of antenna lead.
- Keep connecting cords (or antenna lead-in) away from transformers or motors, and at least 3 meters (10 feet) from TV sets and fluorescent lights.
- Adjust the antenna.
- Keep the speaker cords, connecting cords and power cords from the LAYOUT-FREE AM antenna (or antenna lead-in) at the rear.

Ignition noise
- Install the outdoor antenna away from heavy traffic.
- Use a shielded or coaxial lead-in for the antenna.

Electrostatic charge.
- Ground the tuner.

SPECIFICATIONS

FM tuner section

Tuning range 87.5 MHz - 108 MHz
Antenna terminals
300 ohms, balanced
75 ohms, unbalanced
Intermediate frequency
10.7 MHz
Sensitivity at 50 dB quieting
16.1 dBf, 3.5 μV (mono)
37.9 dBf, 43 μV (stereo)
Usable sensitivity
10.3 dBf, 1.8 μV (IHF)
Signal-to-noise ratio
(at 75 kHz deviation)
84 dB (mono)
78 dB (stereo)
Harmonic distortion at 1 kHz
0.08% (mono)
0.15% (stereo)
IM distortion 0.08% (mono)
0.15% (stereo)
Separation at 1 kHz
50 dB
Frequency response
30 Hz - 15 kHz $^{+0.2}_{-0.5}$ dB
Selectivity at 400 kHz
80 dB
Capture ratio 1.0 dB
AM suppression ratio
65 dB
Image response ratio
80 dB
IF response ratio
90 dB
Spurious response ratio
100 dB
RF intermodulation
74 dB (IHF)
Muting threshold
Approx. 30 dBf, 18 μV
Output level/impedance at 75 kHz deviation
750 mV, 3.3 k ohms

AM tuner section

Tuning range 530 - 1610 kHz (10 kHz step)
531 - 1602 kHz (9 kHz step)
Antenna LAYOUT-FREE AM antenna
external antenna terminal
Intermediate frequency
450 kHz
Usable sensitivity
LAYOUT-FREE AM antenna
300 μV/m (at 999 or 1,000 kHz)
external antenna
30 μV (at 999 or 1,000 kHz)
Signal-to-noise ratio
54 dB (50 mV/m)
Harmonic distortion
0.3% (at 50 mV/m, 400 Hz)
Selectivity 38 dB (10 kHz), 35 dB (9 kHz)

General

System PLL quartz-locked digital synthesizer system
FM stereo, FM/AM super-heterodyne tuner
Power requirements
120 V ac, 60 Hz
Power consumption
11 watts
Dimensions Approx. 430 × 80 × 275 mm (w/h/d)
(17 × 3¼ × 10⅞ inches)
including projecting parts and controls
Weight 3.3 kg (7 lbs 5 oz)
Accessories supplied
Ribbon antenna (1)
Connecting cord (1)
LAYOUT-FREE AM antenna (1)
Station label (1 set)

Design and specifications subject to change without notice.

Sony Corporation Printed in Japan

3-773-932-21 (1)